

FOSTER MINERALS, LTD.
BEARD OIL CO.

IBLA 93-166 et al.

Decided February 10, 1994

Appeals from decisions of the New Mexico State Office, Bureau of Land Management, rejecting noncompetitive oil and gas lease offers in whole or in part. NMA-58178 (TX) et al.

Affirmed in part, reversed in part and remanded.

1. Oil and Gas Leases: Known Geologic Structure--Oil and Gas Leases:
Lands Subject To--Oil and Gas Leases: Offers to Lease

BLM properly rejected a noncompetitive future interest oil and gas lease application for land determined to be within the known geologic structure of a producing oil or gas field.

2. Oil and Gas Leases: Known Geologic Structure

BLM improperly included all of a State survey of a tract of acquired lands in Texas within the known geologic structure of a producing oil or gas field where the survey was crossed by the presumptively productive limits of that structure.

3. Oil and Gas Leases: Known Geologic Structure

BLM designation of a known geologic structure of a producing oil or gas field will be upheld where BLM has established a reasonable probability that the area included in that structure is underlain by a series of related stratigraphic traps in formations that have elsewhere been shown to be productive of oil or gas, and a challenge to the KGS designation that fails to demonstrate otherwise by a preponderance of the evidence must be rejected.

APPEARANCES: Ernest C. Baynard III, Esq., Washington, D.C., for Foster Minerals, Ltd.; John R. Brown, Vice President, Beard Oil Company, Oklahoma City, Oklahoma, for Beard Oil Company; Margaret Miller Brown, Esq., Office of the Field Solicitor, U.S. Department of the Interior, Santa Fe, New Mexico, for the Bureau of Land Management.

OPINION BY ADMINISTRATIVE JUDGE ARNESS

Foster Minerals, Ltd. (Foster), and Beard Oil Company (Beard) have appealed from decisions of the New Mexico State Office, Bureau of Land Management (BLM), dated December 10, 1992, and February 4, 1993, rejecting 29 noncompetitive oil and gas lease offers, NMA-58178 (TX) et al., in whole or in part because the land sought to be leased had been determined to be within a known geologic structure (KGS) of a producing oil or gas field either prior to or after the filing of their offers in 1983 and 1985, and was consequently only available for leasing by competitive bidding. BLM has requested expedited review of these cases, "which have been pending since the early 1980's," as in the interest of all parties involved, inasmuch as continued delay hinders logical development of the resource. BLM urges, without objection from either appellant, that, "as a matter of policy," these cases should be expedited. Accordingly, we advance these cases on the docket for review. Upon review, we affirm the BLM decisions rejecting noncompetitive lease offers within land designated as a KGS for reasons described hereafter, but modify those decisions to the extent they included all lands included in certain State surveys regardless of whether the entire survey was included within the presumptively productive limits of a KGS.

Pursuant to the Mineral Leasing Act for Acquired Lands (MLAAL), as amended, 30 U.S.C. §§ 351-359 (1988), on December 16, 1983, Foster filed five noncompetitive future interest oil and gas lease offers for all or part of tracts of acquired land in San Jacinto County, Texas, within the Sam Houston National Forest. See Appendix A attached hereto. Foster's offers, including the surveys referred to in the descriptions of the lands in the offers and depicted on attached Forest Service maps (as confirmed by BLM's oil and gas plats), are shown in Appendix A, together with offers conflicting in whole or in part with Foster's. The tracts were identified by numbers assigned by the Forest Service, U.S. Department of Agriculture, at the time of acquisition. The parcels sought were described by metes and bounds, referring to the original State surveys encompassed in whole or in part by the acquisition tracts, and were also depicted on attached Forest Service maps. Future interest lease offers were filed by Foster in 1983 because the mineral interest was then still reserved by the United States' grantor. The surface estate of the land was conveyed to the United States in 1935 and 1936 by deeds from the Foster Lumber Company (Foster Lumber) that reserved all minerals (including oil and gas). The reservation was effective until January 1, 1985, and so long thereafter as minerals were produced in commercial quantities, whereupon it would continue, in 5-year increments, to the extent of a 1-mile radius around each producing well. On July 1, 1968, Foster acquired Foster Lumber's reserved mineral interest by assignment. Once these minerals vested in the United States, Foster's future interest offers ripened into present interest offers as to the minerals so vested. See The Joyce Foundation, 102 IBLA 342, 348 (1988). The future interest offers remained outstanding as to any minerals remaining unvested.

All of Foster's lease offers conflict with offers later filed by Beard. On June 5, 1986, Beard filed protests, objecting to issuance of any lease

to Foster because Foster had allegedly failed to properly describe the lands sought in its various lease offers by failing to provide a metes and bounds description giving all courses and distances between successive angle points, as required by 43 CFR 3111.2-2(b) (1985).

On January 2 and April 10, 1985, following acquisition of the minerals (including oil and gas) by the United States, Beard filed 24 noncompetitive oil and gas lease offers with respect to all or part of certain tracts of acquired land in Walker, Montgomery, and San Jacinto Counties, Texas, within the Sam Houston National Forest. See Appendix A. Beard's offers, and offers in conflict therewith, including the surveys depicted on attached Forest Service maps (as confirmed by BLM's oil and gas plats), are shown in Appendix A. The land was described in most cases by acquisition tract numbers. However, it was also depicted on attached Forest Service maps, permitting BLM to determine the particular parcels of land sought, including the original State surveys that were encompassed in whole or in part by the offers. (In the case of lease offers NMA-61097 (TX), NMA-61098 (TX), NMA-61099 (TX), NMA-61100 (TX), NMA-61101 (TX), NMA-61102 (TX), NMA-61103 (TX), NMA-61104 (TX), NMA-62543 (TX), NMA-62544 (TX), NMA-62545 (TX), NMA-62551 (TX), and NMA-62552 (TX), Beard provided a metes and bounds description of the land.)

The Forest Service notified BLM in title reports dated August 23, 1985, and January 16, May 2, and September 2, 1986, following expiration of the mineral reservations, that minerals including oil and gas in some of the land sought by Foster and Beard had not vested in the United States as a result of production. The number of acres of land containing minerals, which the Forest Service found had vested in the United States, appears in Appendix A. The remaining acreage containing minerals, title to which has not vested in the United States, was depicted on maps attached to the title reports. By decisions dated March 21, and April 17, 1986, BLM required Foster, within 30 days of receipt of the decisions, to provide, in the case of lease offers NMA-58178 (TX) and NMA-58180 (TX), a metes and bounds description either of the land that remained or of the land that no longer remained subject to the mineral reservations as a result of production occurring on the date of their expiration, so that BLM might lease the available land. The required descriptions were filed on May 12 and 28, 1986. No further action was taken by BLM, with one exception. By decision dated December 10, 1992, BLM rejected Beard's lease offer NMA-60921 (TX) to the extent that it encompassed land that the Forest Service had determined remained subject to the mineral reservation due to production occurring on the date of its expiration. An appeal was taken from the decision, but it was later withdrawn by Beard and dismissed by the Board on February 19, 1993 (IBLA 93-197). In no other case did BLM reject a lease offer, in whole or in part, because it encompassed land that remained subject to a mineral reservation.

BLM determined that all or part of the land in the subject lease offers was within a KGS, designated either before or after the filing

of the offers. 1/ BLM then issued the December 1992 and February 1993 decisions rejecting the offers to the extent they included land within a KGS. 2/ Foster and Beard appealed from those decisions.

[1] Instead of challenging the KGS designation by BLM, Foster contends on appeal that BLM improperly rejected the Foster offers because BLM may issue a noncompetitive future interest oil and gas lease for acquired lands that have been determined to be within a KGS. That is not the law. BLM was required by statute (30 U.S.C. §§ 226(b), 352 (1980)), at the time Foster's offers were filed, to lease lands within a KGS only by competitive bidding. See Enron Oil & Gas Co., 117 IBLA 392, 396-97 (1991). That statute still applies to offers that were pending on December 22, 1987. See 101 Stat. 1330-259 (1987). BLM was therefore required to reject any noncompetitive offer, whether for a future or present interest, for such lands. See Enron Oil & Gas Co., supra at 397. We have been shown no reason to depart from this ruling. Foster argues that issuance of a noncompetitive future interest lease is only precluded, under

1/ All of Foster's offers NMA-58178 (TX) and NMA-58180 (TX) were found to be within the Sam Houston National Forest KGS, effective Oct. 14, 1992. Part of the land in Foster's offer NMA-58183 (TX) was found to be within the Mercy Field KGS, effective July 5, 1962, and the Southeast Mercy Field KGS, effective Sept. 14, 1987. Part of the lands in Foster's offers NMA-58185 (TX) and NMA-58186 (TX) was determined to be within the Sam Houston National Forest KGS, effective Oct. 14, 1992. Part of the lands in Beard's offers NMA-60907 (TX), NMA-60908 (TX), NMA-60924 (TX), NMA-60928 (TX), NMA-60929 (TX), NMA-61102 (TX), NMA-61103 (TX), NMA-61104 (TX), NMA-62543 (TX), and NMA-62551 (TX) was found to be within the Sam Houston National Forest KGS, effective Oct. 14, 1992. All of Beard's offers NMA-60930 (TX), NMA-60931 (TX), NMA-61097 (TX), NMA-61098 (TX), NMA-61099 (TX), NMA-61100 (TX), NMA-61101 (TX), NMA-62544 (TX), NMA-62545 (TX), and NMA-62552 (TX) were found to be within the Sam Houston National Forest KGS, effective Oct. 14, 1992. Part of the land in Beard's offer NMA-60922 (TX) was found to be within the West Mercy and Mercy Field KGS's, effective July 5, 1962, and the West Mercy and Mercy Field KGS's, effective Sept. 14, 1987. Part of the land in Beard's offer NMA-60923 (TX) was found to be within the Mercy Field KGS, effective July 5, 1962, and the Southeast Mercy Field KGS, effective Sept. 14, 1987. Finally, part of the land in Beard's offer NMA-60921 (TX) was found to be within the Mercy Field KGS, effective July 5, 1962, the Southeast and Southwest Mercy Field KGS's, effective Sept. 14, 1987, and the Southeast Mercy Field KGS, effective Jan. 19, 1993. In the case of those offers determined to be partially within a KGS, the number of acres within the KGS appears in Appendix A.

2/ BLM also found that Beard's offer NMA-60923 (TX) partially encompassed land (648 acres) already leased to Foster under lease NMA-58187 (TX), issued effective Dec. 1, 1986. BLM should have rejected Beard's offer to this extent. See Robert B. Bunn, 102 IBLA 292, 295 (1988). In addition, the record indicates that a portion (2.58 acres) of the land encompassed by Beard's offer NMA-60924 (TX) was conveyed by the United States on Feb. 1, 1983. Again, BLM should have rejected the offer to this extent. See id.

43 CFR 3111.3-1(a) (1983) (formerly 43 CFR 3150.4-1 (1982)), in the case of acquired lands with "known mineral deposits, which is not the same as a KGS" (Statement of Reasons for Appeal (SOR) (IBLA 93-166) at 3). Lands included within a KGS contain known mineral deposits (see 43 CFR 3100.0-5(l) (1987)); consequently, 43 CFR 3111.3-1(a) (1983) does not permit noncompetitive leasing. BLM is required by statute to reject a noncompetitive future interest offer for acquired land within a KGS. Cf. Worth D. Ware, 74 IBLA 256, 257-58, 259 (1983) (noncompetitive fractional interest offers).

Foster has also objected to the descriptions used in the December 1992 decisions to indicate the lands subject to KGS determinations, such as "lands in the * * * Survey." Foster argues that BLM could not properly rely on State surveys since they are not official surveys of the United States because they were not performed by or on behalf of BLM. See Wilogene Simpson, 110 IBLA 271, 275 (1989). We know of no requirement that the boundaries of a KGS be officially surveyed by the United States. Nor do we know of any reason why BLM cannot rely on the metes and bounds descriptions of State surveys to define KGS boundaries. See Beard Oil Co., 99 IBLA 40, 47-48 (1987). Nonetheless, Foster indicates that such descriptions are insufficient to define the extent to which its offers cover land within a KGS. We conclude that the affected lands are adequately described in the sense that Foster (and the Board, on review) is given notice of the land included in a KGS, as well as the basis for the inclusion. See Petex Inc., 104 IBLA 72, 74 (1988); Carolyn J. McCutchin, 84 IBLA 368, 369 (1985). The land included in each of Foster's lease offers was described by reference to the original State survey or surveys encompassed in whole or in part by the offer and was depicted on an attached map. These lands were in turn posted to BLM's oil and gas plats. In determining whether the lands described were within a KGS, BLM relied, in the case of the Sam Houston National Forest KGS, on a listing of those State surveys that were included, in their entirety, in the KGS. See Memorandum from the Deputy State Director, Division of Lands and Minerals, New Mexico, BLM, to the Deputy State Director, Division of Operations, New Mexico, BLM, dated Oct. 20, 1992. To the extent that a lease offer encompassed any land in one of those surveys (whether all or part of the survey), it clearly covered land within the KGS. The relevant surveys are stated in BLM's December 1992 decisions, in the case of lease offers NMA-58178 (TX), NMA-58180 (TX), NMA-58185 (TX), and NMA-58186 (TX). In the case of the other KGS's, BLM relied on maps depicting the State surveys included, either entirely or partially, in a KGS. See "Mercy and West Mercy Oil Fields" KGS Map, dated July 5, 1962; "Southeast Mercy Field" KGS Map, dated Sept. 14, 1987. The general extent of the overlap between the land included in Foster's lease offer NMA-58183 (TX) and the KGS land is shown by comparing the Forest Service map attached to the lease offer and the KGS maps. Again, the relevant surveys are noted in BLM's December 1992 decision, in the case of that offer. We recognize that the precise boundaries of the land in Foster's offer is not given in the decision where not all of each of the surveys is within a KGS. However, it is to the extent that a lease offer contains land within a KGS that we affirm BLM's rejection of Foster's noncompetitive offers. Beyond that, it is left to BLM, with the assistance of Foster, to arrive at an appropriate description in any lease of the remaining lands in Foster's offers not within a KGS. See Beard Oil Co., 103 IBLA 251 (1988).

Finally, Foster contends that the decision rejecting its lease offers failed to consider whether the United States had in fact acquired all of the oil and gas underlying the subject land in 1985, pursuant to the terms of the original deeds from Foster Lumber. It is clear that BLM, with the assistance of the Forest Service, did assess whether title to the oil and gas underlying all of the land described in Foster's lease offers had vested in the United States at the time of expiration of the mineral reservations. However, it was not necessary that BLM determine the extent to which those offers then covered present and future interests as a result of the partial vesting of the reserved mineral interest in the United States because, by virtue of the KGS designations, it was required to reject any noncompetitive offer because such land could only be leased competitively. It is that question alone that is before us for review.

Beard objects to inclusion within a KGS of all acquired lands in an original State survey where the limit of the presumptively productive acreage of the KGS merely crosses a portion of that survey. Foster also objected to this practice, but only because it was "not explained." See Foster SOR at 2. ^{3/} Beard recognizes that it has been BLM practice to include the smallest legal subdivision of public domain land (usually 40 acres) in a KGS where the presumptively productive limit of the KGS crosses the subdivision, but finds no sanction in the MLAAL for a like approach in the case of acquired land tracts, which may contain upwards of 15,000 acres in Texas. Beard contends that to require lands not within the geologic limits of a KGS to be leased competitively is contrary to the MLAAL. Beard concludes that this practice has resulted in the inclusion within a KGS of from 200 (Thomas P. Whitmore Survey (A-638)) to 2,900 (Samuel T. Moore Survey (A-354)) acres which do not fall within the presumptively productive limits of the KGS. Beard contends that the boundary of a KGS should be drawn using metes and bounds descriptions that follow the presumptively productive limits of each KGS. Beard argues that it is required to use such descriptions in its lease offers where it seeks less than an acquired land tract, and offers to provide appropriate descriptions for the various KGS's.

[2] BLM included, in both the Sam Houston National Forest KGS and the January 1993 addition to the Southeast Mercy Field KGS, all of the land in a State survey where the survey was crossed by the presumptively productive limits of the KGS (that being the 0-foot contour in the case of the Sam Houston National Forest KGS and the minus 10,800-foot contour and an east-west fault line in the case of the January 1993 addition to the Southeast

^{3/} State surveys crossed by the presumptively productive limits of a KGS, and thereby included in their entirety in the KGS, are underscored in Appendix A. The affected lease offers include over half of the subject offers: NMA-58178 (TX), NMA-58180 (TX), NMA-58185 (TX), NMA-58186 (TX), NMA-60908 (TX), NMA-60911 (TX), NMA-60924 (TX), NMA-60928 (TX), NMA-60929 (TX), NMA-60930 (TX), NMA-60931 (TX), NMA-61101 (TX), NMA-61102 (TX), NMA-61103 (TX), NMA-61104 (TX), NMA-62543 (TX), NMA-62544 (TX), NMA-62551 (TX), and NMA-60921 (TX).

Mercy Field KGS). See Memoranda to the Deputy State Director, Division of Operations, New Mexico, BLM, from the Deputy State Director, Division of Lands and Minerals, New Mexico, BLM, dated Oct. 20, 1992, and Jan. 25, 1993.

A KGS was defined by Departmental regulations as the "trap in which an accumulation of oil or gas has been discovered by drilling and determined to be productive, the limits of which include all acreage that is presumptively productive." 43 CFR 3100.0-5(l) (1987). Generally speaking, a KGS should include only land that is actually productive or is deemed to be presumptively productive of oil or gas due to the presence of an underlying trap or related traps that have elsewhere been shown to be productive of oil or gas. See Thunderbird Oil Corp., 91 IBLA 195, 202 (1986), aff'd sub nom. Planet Corp. v. Hodel, No. 86-679 HB (D.N.M. May 6, 1987).

Designation of land as a KGS has administrative consequences for oil and gas leasing purposes. Since such land is available only for competitive leasing, BLM must provide for such leasing and reject any attempts to lease the land by noncompetitive means. In order to accomplish this, BLM must be clear about what land is designated within a KGS. The boundaries of a KGS, however, are determined by the geologic limits of the underlying oil and gas deposit(s) and conform to no surface property lines. In the case of public domain lands, delineation of KGS boundaries can, for administrative purposes, best be accomplished by including within a KGS the smallest legal subdivision (generally a quarter quarter section, but also a surveyed tract or lot, see Conservation Division Manual § 620.3.6E (Sept. 10, 1981)) that is entirely or partially included within the actual geologic limits of the KGS. Pamela S. Crocker-Davis, 94 IBLA 328, 331 (1986); Charles J. Babington, 4 IBLA 43, 46, 47 (1971). As so defined, the boundaries of the KGS can be easily ascertained. The tradeoff for this concession to administrative convenience is that a small amount of land not technically entitled to be designated will be included in the KGS. See Lavaca-Navidad River Authority, 115 IBLA 373, 383 (1990). But by virtue of inclusion in the KGS, this land is also considered to be presumptively productive. See Pamela S. Crocker-Davis, supra at 331.

Acquired lands, however, pose an entirely different situation. Their boundaries are not necessarily defined by any legal subdivisions. That is especially true in Texas, which was never officially surveyed by the United States. Rather, Texas surveys follow property lines of Spanish and Mexican land grants and subdivisions thereof. It is clear that the inclusion within a KGS of all the land in a State survey where only a portion of that survey is included within the actual geologic limits of the KGS will have administrative benefits because the KGS boundaries can be easily defined. However, as Beard points out, the result can be the inclusion in a KGS of a large quantity of land that is not properly included in the KGS. BLM does not dispute Beard's assertion that from 200 to 2,900 acres of land that is not presumptively productive of oil or gas was included in the Sam Houston National Forest KGS and the January 1993 addition to the Southeast Mercy Field KGS. As we said in Pamela S. Crocker-Davis, supra at 331, in rejecting BLM's attempt to include all of a 640-acre State spacing unit in a KGS where it was crossed by the presumptively productive limits of the KGS,

the result would be to "drastically increase[] the amount of acreage not on the structure which is included in the KGS." (Emphasis added.) See also Celeste C. Grynberg, 106 IBLA 219, 222 (1988); Charles J. Rydzewski, 105 IBLA 9, 13 (1988). As was the case with 640-acre State spacing units, BLM has offered no theoretical justification for this similar approach using State surveys. Nor can we find any sanction for it in the MLAAL or implementing regulations. Rather, it is directly contrary to the regulation that defines a KGS since it includes a large segment of land that is plainly not productive or presumptively productive of oil or gas where it is "not on the structur[al, stratigraphic, or combination trap(s)]." See also Arkla Exploration Co. v. Watt, 562 F. Supp. 1214, 1221-22, 1227 (W.D. Ark. 1983), aff'd, 734 F.2d 347 (8th Cir. 1984), cert. denied, 469 U.S. 1158 (1985) (Geological Survey improperly extended KGS boundaries a set distance from producing wells). Therefore, we conclude that BLM improperly included all land in a State survey within a KGS where the survey was crossed by the presumptively productive limits of a KGS.

Nevertheless, BLM is not required to follow exactly the geologic limits of a KGS. It may, for administrative convenience, define the boundaries of a KGS by drawing straight lines that include a small amount of acquired land that is not technically KGS. That has been the practice of BLM (and its predecessor, Geological Survey) in the past. See Conservation Division Manual § 620.3.7B (Sept. 10, 1981) ("metes and bounds" descriptions). We can find no justification for BLM's current deviation from that practice. Moreover, to sanction it would be to undermine the regulatory definition of a KGS, and would violate the MLAAL. On remand, BLM is directed to properly define the boundaries of the Sam Houston National Forest KGS and the January 1993 addition to the Southeast Mercy Field KGS in accordance with past practice. To the extent that BLM has rejected Beard's (and Foster's) noncompetitive oil and gas lease offers by inclusion of land in the Sam Houston National Forest KGS and the January 1993 addition to the Southeast Mercy Field KGS because they are within a State survey that is crossed by the presumptively productive limits of a KGS although part of the survey does not fall within the proper boundaries of that KGS, the December 1992 and February 1993 BLM decisions are reversed. The cases are remanded to BLM so that the boundaries of the KGS may be properly redrawn, whereupon BLM may once again adjudicate the lease offers.

Beard also challenges the creation of the Sam Houston National Forest KGS, effective October 14, 1992, but does not object to any of the other KGS's established earlier. See SOR (IBLA 93-171) at 2. The Sam Houston National Forest KGS was based on an April 21, 1992, report prepared by two BLM geologists (Richard W. Melton and Kermit G. Wetherby), entitled "Geostatistical Evaluation of the Sam Houston National Forest Known Geologic Structure" (BLM Report). The report finds that oil and gas is produced within the National Forest from three Tertiary stratigraphic formations (in descending order of depth): the Jackson Group (including Manning, Wellborn, and Caddell), Yegua, and Wilcox. See BLM Report at 1, 5. In an effort to determine the depths of the tops of the Jackson Group and Yegua formations in and around the National Forest, BLM used the results of drilling in that area. Based on this, BLM developed three cross-sections (A-A', B-B', and

C-C') that cross the National Forest from north to south in the eastern and western halves of the National Forest (A-A' and B-B') and from east to west across much of the entire National Forest (C-C'). The conclusion is drawn that the Jackson Group and Yegua formations are found at varying depths within the National Forest, but dipping gradually to the southeast. See Maps 2 and 3 attached to BLM Report. In addition, BLM found that both formations are made up of sand bodies described as "multiple, stacked, and overlapping," with the Yegua formation having the larger number of such bodies (BLM Report at 5). BLM also mapped the percentage of sand in these formations. Finally, BLM mapped, by means of contour lines (or isopachs), the various net effective reservoir thicknesses (from 15 to 0 feet) in both formations surrounding wells within the National Forest capable of or producing oil and gas, using a geostatistical sampling of results of drilling in the area. See Maps 6, 7, and 8 attached to BLM Report. The report recommended that the "zero [foot] contour * * * be considered the geologic boundary of presumptively productive acreage within the * * * [KGS]" (BLM Report at 21). (The net effective reservoir was defined, using producing wells in the area, as "a bed with 10mv or greater negative SP [spontaneous potential] deflection and resistivity spike greater than 1.5 ohms" (BLM Report at 9)).

[3] Beard's objection to designation of the Sam Houston National Forest KGS rests on a May 1993 report prepared by Henry L. Cullins, a former employee of the Conservation Division, Geological Survey (hereafter Cullins Report), with 19 years of experience in preparing and reviewing KGS determinations. One who challenges the creation by BLM of a KGS has the burden of proving, by a preponderance of the evidence, that BLM improperly included land in the KGS. See Enron Oil & Gas Co., supra at 397-98. That is a particularly heavy burden to bear in view of the well-established rule that, in order to include land in a KGS, BLM need not determine that all of the land is in fact productive of oil or gas. See id. at 397. All that is required is that BLM have reliable evidence giving rise to a reasonable probability that a structural, stratigraphic or combination trap or a series of related traps extends under the land and that they have proven to be productive of oil or gas elsewhere. Edward F. Scholls, 109 IBLA 23, 26 (1989). Before designating a parcel of land, it is not necessary that oil or gas actually be produced from or in the immediate vicinity of the land. Kathleen M. Blake, 96 IBLA 61, 67 (1987). A party challenging a KGS determination must establish either that the land is not underlain by the trap or related traps or that they will, in fact, not be productive of oil or gas. Thunderbird Oil Corp., supra at 202.

Cullins does not dispute that the National Forest is underlain by the Jackson Group and Yegua formations. However, it is clear that these formations are not uniformly productive of oil and/or gas throughout the National Forest due to a single trap. Rather, the oil and gas is contained in "multiple" sand bodies or reservoirs within each formation and there is no assertion that any of these sand bodies continues throughout either formation (BLM Report at 5). BLM regards these multiple sand bodies as "stacked and overlapping," meaning that together they form a continuous reservoir throughout a significant portion of the formation within the

National Forest. Id. In designating the KGS, BLM relied on a series of stratigraphic traps that were considered to be related in the sense that they were to be found (to varying degrees) within the same two formations. Traps were considered related where they were "vertically overlapping, areally contiguous, and/or represent the same environment of deposition and accumulation" (BLM Manual, Chapter 3022.1 (Glossary of Terms)). It is not necessary that such traps be connected in a single trap. See Source Petroleum Co., 112 IBLA 184, 189 (1989) (KGS may encompass "numerous related, but nevertheless independent, stratigraphic * * * traps").

Relying on a sampling of the data derived from wells drilled within the National Forest, BLM determined that there were three principal reservoirs (composed of multiple, stacked, and overlapping sand bodies) under a substantial portion of the center and the eastern and western halves of the National Forest. The locations of these reservoirs were mapped by placement of various net effective reservoir thicknesses (depicted as contour lines). See Map 8 attached to BLM Report. Cullins disputes BLM's placement of those reservoir thicknesses, asserting that BLM failed to take into account numerous wells, many of which were dry holes. These other wells, shown on Cullins' Exhibit 1, are scattered throughout the KGS. Cullins asserts that the geologic data "strongly indicate[s]" that the reservoirs are "small" and "isolated" and that the "probability of dry holes is considerably greater than the probability of finding oil and gas" (Cullins Report at 2). He concludes that, by running cross-sections between wells, it can be demonstrated that large areas of the KGS are in fact underlain by "water-wet sands" (Cullins Report at 7). He offers a few sample cross-sections. See Exhs. 3, 4, 5, and 11 attached to Cullins Report. All of this ignores, however, the evidence of wells capable of or producing oil or gas in the vicinity of the dry holes and also to be found throughout the KGS. See Exh. 1 attached to Cullins Report. Of the 165 wells relied upon by BLM, 90 had the demonstrated capacity to produce oil or gas (as shown by a net effective reservoir thickness of over zero). See BLM Report at 10-12 ("Table 1"). In this light, the presence of dry wells throughout the KGS is not disqualifying since, due to the nature of oil and gas deposition, a dry hole may be located near a productive well. Indeed, that is often the case here. See Exh. 1 attached to Cullins Report. Overall, as stated in Ricky J. Calhoon, 110 IBLA 112, 115 (1989): "The existence of dry holes in a generally productive region may simply be indicative of the fact that, although the area is generally underlain by a productive reservoir, there are isolated spots where, because of anomalous * * * stratigraphic factors, [oil or] gas is not found." See also Robert E. Eckels, 104 IBLA 28, 33 (1988). We therefore conclude that, given the number of wells capable of or producing oil or gas throughout the KGS, there is a reasonable probability that oil or gas will be found in a productive interval of the Jackson Group or Yegua formation adjacent to or near any one of the dry holes.

BLM has admittedly extrapolated the presence of oil or gas underlying much of the National Forest, as in the case of an area south of two wells in the center of the National Forest (Nos. 862 and 863), that were capable of producing gas. Cullins points out that a lone dry hole (No. 312.1) is to be found in this area. See Cullins Report at 2; Exh. 11 attached to Cullins

Report. Nonetheless, BLM has extended the 5-foot contour line through this area. See Map 8 attached to BLM Report. Generally speaking, such extrapolation by geologic inference is permissible in determining whether land is presumptively productive of oil or gas. See Beard Oil Co., 99 IBLA at 45, 46 (BLM postulates extension of fracturing away from fault lines and carrying oil and gas into undrilled areas). In particular, BLM's placement of the contour line is supported by the demonstrated thinning of the net pay sand generally in the area. See Map 8 attached to BLM Report; Celeste C. Grynberg, 112 IBLA 13, 16 (1989). In this circumstance, Beard's burden is to demonstrate that the land is not in fact underlain by any oil or gas reservoir. It cannot do so by showing merely that a dry hole has been found in this or any given area, since oil or gas may yet be found adjacent thereto or nearby. See Steven Gerald Kirkwood, 110 IBLA 363, 365 (1989). Again, as we said in Beard Oil Co., 99 IBLA at 46, dry holes may simply establish the "existence of small, localized areas lacking in production." Given the nature of the oil and gas reservoir postulated here, which is believed to contain multiple, stacked, and overlapping sand bodies, this is expected since it is quite possible that there are limited areas where no such body is to be found. See also Patricia A. Laudon, 107 IBLA 26 (1989), Roger Schock, 105 IBLA 121 (1988), Wally J. Picou, 95 IBLA 98 (1986), and R. K. O'Connell, 85 IBLA 29 (1985) (KGS underlain by lenticular and/or discontinuous sand bodies). Moreover, dry holes are found within prior existing KGS areas in the National Forest. See Map 1 attached to BLM Report; Exh. 1 attached to Cullins Report. Yet Cullins does not dispute the older KGS boundaries. See Cullins Report at 4. Indeed, Beard states (in apparent contradiction of the Cullins position concerning the significance of dry holes), that the older KGS's were established "under sound geologic principles" (SOR (IBLA 93-171) at 2)). To carry the burden of proof imposed upon the appellant in these cases, Beard must establish that each area that it considers to be improperly included in the KGS (because of the presence of a dry hole) is not underlain by any oil or gas. It has not done so.

Cullins also contends that BLM placed numerous contour lines erroneously so as to depict net effective reservoir thicknesses in both the Jackson Group and Yegua formations. See Cullins Report at 2. According to Cullins, BLM put wells with certain net effective reservoir thicknesses in areas where the net effective reservoir thickness mapped by BLM was, in some cases, greater than and, in other cases, less than that indicated by the well. See Appendices A-1 and A-2 attached to Cullins Report. These "errors in contouring" are principally grouped in three areas, each of which has a number of other wells (Cullins Report at 2). See Exh. 2 attached to Cullins Report. Cullins has, however, failed to explain why it was improper for BLM to have relied on these other wells. Cullins also disputes BLM's definition of what constitutes a net effective reservoir thickness (i.e., resistivity and spontaneous potential readings of greater than 1.5 ohms and -10 mv or greater), contending that "[n]owhere in the area was [he] able to find a productive well which had those parameters" (Cullins Report at 5). According to Cullins, among the productive wells, the resistivity reading was generally in excess of 2.5 ohms and never less than 2 ohms. However, in so saying, Cullins refers to a list of 42 producing wells. See id. (referring to "Appendix C-1"). This is clearly only a partial listing

since (by Cullins' count) there are 135 productive wells in the area. Id. at 2. His assertion, moreover, runs directly counter to BLM's report that the parameters used "were derived from logs of producing wells in the area" (BLM Report at 9). Cullins has therefore failed to demonstrate that the BLM report is inaccurate.

Cullins also argues that even readings of 3 ohms or greater may not be indicative of the presence of an oil or gas reservoir since they may simply indicate the presence of coal or a "hard streak." See Cullins Report at 5. However, he has presented no evidence that any of the net effective reservoir thicknesses relied upon by BLM erred in this regard. Further, BLM's reliance on the spontaneous potential exhibited by a well is apparently a way of ensuring that the resistivity reading does not indicate the presence of coal since coal generally exhibits a "baseline" deflection (BLM Report at 9). Cullins also states that BLM improperly established a cut-off resistivity parameter for the entire National Forest, arguing that "[e]ach locale has to be considered on its own merits" since the factors that affect resistivity (e.g., water resistivity and lithology) "vary from locale to locale" (Cullins Report at 5). However, he fails to demonstrate that the parameter used by BLM is not applicable throughout the National Forest, or even to suggest what parameter should have been used in any given area. He consequently has failed to establish that BLM erred in relying on a cut-off resistivity parameter for the entire National Forest. We have previously approved such an approach. See Joy Goldschmidt, 107 IBLA 237 (1989); Gerald F. D'Unger, 104 IBLA 104, 110, 112 (1988), aff'd, Bubala v. Lujan, No. 88-3420 (RCL) (D.D.C. Jan. 30, 1991), aff'd, No. 91-5099 (D.C. Cir. May 11, 1992) ("resistivity anomalies").

Cullins has not demonstrated that BLM improperly located the 0-, 5-, 10-, and 15-foot net effective reservoir thickness contour lines for the Jackson Group and Yegua formations within the National Forest. It is true that placement of these contours was based on a projection of a reservoir by using geologic data discovered in wells drilled in the area. This projection was then linked to surrounding areas on the theory that they are underlain by a series of related reservoirs. This sort of reasoning is permissible; by so doing, BLM has done more than simply conclude that the "favorable conditions" for the existence of oil or gas exist (Cullins Report at 4). It has established that there is a "reasonable probability" that at least one of the multiple, overlapping sand bodies inferred from existing data to contain oil or gas underlies the subject land. See Wally J. Picou, supra at 102. Geologic certainty is not required. See Source Petroleum Co., supra at 191. Moreover, there is absolutely no evidence that BLM simply "subvert[ed] [its] geologic interpretation" for the purpose of a "desired, bureaucratically pre-determined outcome" (Cullins Report at 1). In order to overcome BLM's projection and linkage, Cullins would have to demonstrate that no well drilled in any of these interlocked surrounding areas would be productive of oil or gas, either because of the absence of any underlying reservoir or for some other reason. Clearly, he has not done so. His contrary opinion alone will not suffice to support the conclusion for which he contends. See Ecological Engineering Systems, Inc., 104 IBLA 117, 120 (1988). Nor can he simply rely on the fact that one or more wells in any given area have been drilled and come up dry.

We are not persuaded that BLM improperly included land in the Sam Houston National Forest KGS where it fell inside the 0-foot contour line, and therefore within the presumptively productive limits of the KGS. Consequently, to the extent that BLM rejected Beard's (and Foster's) noncompetitive oil and gas lease offers for that land, the December 1992 BLM decisions are affirmed.

To the extent that appellants have made other arguments that have not been discussed herein, they have been considered and rejected.

Accordingly, pursuant to the authority delegated to the Board of Land Appeals by the Secretary of the Interior, 43 CFR 4.1, the decisions appealed from are affirmed in part and reversed in part, and the case is remanded to BLM for further action consistent herewith.

Franklin D. Arness
Administrative Judge

I concur:

Bruce R. Harris
Deputy Chief Administrative Judge

APPENDIX A

Acres

Acres

w/Minerals		Acres					
Appeal		Oil & Gas	Date				
Included	Vested in	Within	Conflicting	Conflicting	Date		
Conflicting							
<u>No.</u>	<u>Appellant</u>	<u>Lease Offer</u>	<u>Offer Filed</u>	<u>Description of Lands</u>			
<u>in Offer</u>	<u>U.S.</u>	<u>KGS</u>	<u>Lease Offeror</u>	<u>Lease Offer</u>	<u>Offer</u>		
<u>Filed</u>							

93-166	Foster Minerals, NMA-58178TX	12/16/83	Tract J2-I				
2563.00	1973.00	2563.00	Beard Oil Co.	NMA-60928TX			
1/2/85							
	Ltd.			<u>J. S. Brown Survey</u>			
				Abstract No. 68 *			

93-167	Foster Minerals, NMA-58180TX	12/16/83	Tract J2-I				
1819.00	425.40	1819.00	Beard Oil Co.	NMA-60928TX			
1/2/85							
	Ltd.			James Keys Survey			
				Abstract No. 190 *			
				Abstract No. 191 *			

S. McClelland Survey
Abstract No. 233 *

Polk County School
Land Survey
Abstract No. 241 *

Charles Reyley Survey
Abstract No. 250 *

Heirs of James Smith
Survey
Abstract No. 271 *

R. W. Wilburn Survey
Abstract No. 309 *

William M. White Survey
Abstract No. 310 *

93-168 Foster Minerals, NMA-58183TX 12/16/83 Tract J2-IV
2655.00 2072.10 620.00 Beard Oil Co. NMA-60923TX
1/2/85

Ltd.

W. L. Rhotan Survey
Abstract No. 257 + !

William Dobie Survey
Abstract No. 93 +

James Patterson Survey
Abstract No. 243

T. Dunn Survey
Abstract No. 238

L. A. Gosse Survey
Abstract No. 137

Tract J2-XXI
David M. Bullock
Survey
Abstract No. 69

93-169 Foster Minerals, NMA-58185TX 12/16/83 Tracts J2-VIII, J2-
IX, 3105.14 179.14 2999.39 Beard Oil Co. NMA-60929TX
1/2/85

Ltd.

J2-XI, and J2-XII
George Taylor Survey
Abstract No. 292 *

B.B.B. & C.R.R. Co. Survey
Abstract No. 82 *

Tract J2-XXIV
George Taylor Survey
Abstract No. 292 *

R. C. Miller Lumber
Co. Survey
Abstract No. 412

Tract J2
George Taylor Survey
Abstract No. 292 *

93-170 Foster Minerals, NMA-58186TX 12/16/83 Tract J2 2247.66
2247.66 1280 Beard Oil Co. NMA-60924TX 1/2/85
Ltd. Kindales Bryan
Survey

Abstract No. 73 *

James Booth Survey
Abstract No. 76

T. L. Westbrook
Survey
Abstract No. 365

H. & T.C.R.R. Co.
Survey
Abstract No. 163

93-171 Beard Oil Co. NMA-60907TX 1/2/85 Tract J1p
1067.50 1067.50 774.50 The Moran Corp. NMA-58644TX
4/4/84

William S. Taylor
NMA-58991TX 6/1/84
Survey
Abstract No. 540 *
Abstract No. 545 *

Larkin Day Survey
Abstract No. 163 *

Tract J1q
W. C. Gill Survey
Abstract No. 211

Tract J1-V
I. & G.N.R.R. Co.
Survey
Abstract No. 689

Tract J1-VI
T. & N.O.R.R. Co.
Survey
Abstract No. 574

93-172 Beard Oil Co. NMA-60908TX 1/2/85 Tract J1-II
9199.0 9199.00 6721.00 The Moran Corp. NMA-58644TX
4/4/84

Augustus Steel Survey
NMA-58961TX 4/30/84
Abstract No. 506

John Leigh Survey
Abstract No. 328

H. A. Read Survey
Abstract No. 447

William G. Martin
Survey
Abstract No. 374

W. C. Gill Survey
Abstract No. 236
Abstract No. 211

Abraham Helm Survey
Abstract No. 266

Masino Charves Survey
Abstract No. 142

Matthew Dial Survey
Abstract No. 175

R. G. Hamlet Survey
Abstract No. 261
Abstract No. 243

Samuel S. Wilson
Survey
Abstract No. 598

Charles Black Survey
Abstract No. 78

Benjamin Johnson
Survey
Abstract No. 297

George Leigh Survey
Abstract No. 329

William Faris Survey
Abstract No. 210

J. C. Pearce Survey
Abstract No. 431

James Shannon Survey
Abstract No. 523

W. S. Mays Survey
Abstract No. 394

George W. Strambler
Survey
Abstract No. 528 *

Lemuel Smith Survey
Abstract No. 500 *

J. F. Winters Survey
Abstract No. 602 *

93-173 Beard Oil Co. NMA-60911TX 1/2/85 Tract J1j
584.20 584.20 584.20 The Moran Corp. NMA-59007TX
6/18/84

R. F. Oliver Survey
Abstract No. 410 *

Thomas James Survey
Abstract No. 288 *

Tract J1s
William McBride
Survey
Abstract No. 360*

93-174 Beard Oil Co. NMA-60922TX 1/2/85 Tract J2b 1757.80
1757.80 200.00 The Moran Corp. NMA-60630TX 11/16/84
Francis Reimer Survey
Abstract No. 255 + !

Tracts J1h, J1h-I,
J1h-II, J1h-III,
J1h-IV, J1h-V, J1h-VI
J. Ferguson Survey
Abstract No. 119 + !

93-175 Beard Oil Co. NMA-60923TX 1/2/85 Tract J2-IV
3542.20 2761.40 620.00 Foster Minerals NMA-58183TX
12/16/83

Ltd.

W. L. Rhotan Survey

Abstract No. 257 + !

William Dobie Survey
Abstract No. 93 +

James Patterson Survey
Abstract No. 243

L. A. Gosse Survey
Abstract No. 137

Tract J2-XXI
David M. Bullock
Survey
Abstract No. 69

Tract J37a and J37a-I
William Dobie Survey
Abstract No. 93 +

Tract J6a
William Dobie Survey
Abstract No. 93 +

Tract J2a
H. & T.C.R.R. Co.
Survey
Abstract No. 169

93-176 Beard Oil Co. NMA-60924TX 1/2/85 Tract J2
3060.00 3060.00 1976.00 Foster Minerals, NMA-58186TX
12/16/83

James Booth Survey

Ltd.

Abstract No. 76

Maunie F. Dunnam NMA-58197TX 12/30/83

Kindales Bryan Survey

Abstract No. 73 *

T. L. Westbrook

Survey

Abstract No. 365

H. & T.C.R.R. Co.

Survey

Abstract No. 163

B.B.B. & C.R.R. Co.

Survey

Abstract No. 82*

Tract J5c and J6

I. & G.N.R.R. Co.

Survey

Abstract No. 335

Tract J7

H. & T.C. R.R. Co.

Survey

Abstract No. 163

Tract J37b

James Booth Survey

Abstract No. 76

93-177 Beard Oil Co. NMA-60928TX 1/2/85 Tract J2-I
9519.00 9519.00 5290.00 Foster Minerals, NMA-58178TX
12/16/83

James Keys Survey

Ltd.

NMA-58179TX 12/16/83

Abstract No. 190 *

NMA-58180TX 12/16/83

Abstract No. 191 *

Heirs of James Smith

Survey

Abstract No. 271 *

R. W. Wilburn Survey
Abstract No. 309 *

Polk County School
Land Survey
Abstract No. 241 *

S. McClelland Survey
Abstract No. 233 *

William M. White
Survey
Abstract No. 310 *

Charles Reyley Survey
Abstract No. 250 *

J. S. Brown Survey
Abstract No. 68 *

M. Hutchins Survey
Abstract No. 155

R. Kilgore Survey
Abstract No. 379

I. & G.N.R.R. Co.
Survey
Abstract No. 342

John Faulk Survey
Abstract No. 114

93-178 Beard Oil Co. NMA-60929TX 1/2/85 Tracts J2-VIII,
J2-IX 4264.30 4264.30 4158.55 Foster Minerals, NMA-58185TX
12/16/83

Ltd.

J2-XI, J2-XII

B.B.B. & C.R.R. Co.
Survey
Abstract No. 82 *

George Taylor Survey
Abstract No. 292 *

Tract J2-XXIV
R. C. Miller Lumber
Co. Survey
Abstract No. 412

George Taylor Survey
Abstract No. 292 *

93-179 Beard Oil Co. NMA-60930TX 1/2/85 Tract J1f 163
163 163 The Moran Corp. NMA-60631TX 11/16/84
Hexekkiah Farris
Survey
Abstract No. 116 *

93-180 Beard Oil Co. NMA-60931TX 1/2/85 Tract J1b
8830.03 8830.03 8830.03 The Moran Corp. NMA-59059TX
6/25/84

H. & T.C.R.R. Co.
NMA-59284TX 7/13/84
Survey
NMA-59289TX 7/13/84
Abstract No. 175 *
NMA-60628TX 11/16/84
Abstract No. 176*
NMA-60631TX 11/16/84

A. Slawson Survey
Abstract No. 284 *

J. M. Kellett Survey
Abstract No. 192 *

J. S. Milliman Survey
Abstract No. 223 *

A. Yerian Survey
Abstract No. 329 *

Tonty Lumber Co.
Survey
Abstract No. 414 *

J. A. Ward Survey
Abstract No. 319 *

Vital Flores Survey
Abstract No. 14 *

W. Reeves Survey
Abstract No. 258 *

W. Hollis Survey
Abstract No. 159 *

Hexekkiah Farris
Survey
Abstract No. 116 *

Ruth Y. Miller Survey
Abstract No. 37 *

James H. Collard
Survey
Abstract No. 8 *

93-181 Beard Oil Co. NMA-61097TX 1/2/85 Tract J1-I
4449.40 4449.40 4449.40 The Moran Corp. NMA-58995TX
6/11/84

Parcel A
NMA-59007TX 6/18/84
Thomas James Survey
NMA-59059TX 6/25/84
Abstract No. 287 *

J. Hostetter Survey
Abstract No. 269 *

James H. Truitt
Survey
Abstract No. 559 *
Abstract No. 553 *

John B. Tong Survey
Abstract No. 548 *
Abstract No. 537 *

William R. Martin
Survey
Abstract No. 367 *
Abstract No. 380 *

John Harper Survey
Abstract No. 247 *

James Moore Survey
Abstract No. 406 *

Henry Applewhite
Survey
Abstract No. 60 *

93-182 Beard Oil Co. NMA-61098TX 1/2/85 Tract J1-I
7283.40 7283.40 7283.40 The Moran Corp. NMA-
58996TX 6/11/84

Parcel B
NMA-59007TX 6/18/84
Alexander Whittaker

59058TX 6/25/84

Survey

NMA-

NMA-59059TX

6/25/84

Abstract No. 581 *

Beard Oil Co. NMA-62545TX 4/10/85
J. P. McFarland
Survey
Abstract No. 402 *

W. M. Elkin Survey
Abstract No. 178 *

Thomas A. Cresap
Survey
Abstract No. 123 *

Daniel Hanazkee
Survey
Abstract No. 255 *

J. B. Chesser Survey
Abstract No. 130 *

Thomas Corner Survey
Abstract No. 144 *

Z. Wilson Survey
Abstract No. 604

Henry Applewhite
Survey
Abstract No. 58
Abstract No. 59
Abstract No. 60

John Harper Survey
Abstract No. 247 *

Thomas Toby Survey
Abstract No. 561 *
Abstract No. 562 *

James Moore Survey
Abstract No. 406 *

William Higgins
Survey
Abstract No. 249 *

J. C. Harrison Survey
Abstract No. 263 *

James H. Truitt Survey
Abstract No. 553 *
Abstract No. 559 *

J. W. Ingersoll
Survey
Abstract No. 27 *

93-183 Beard Oil Co. NMA-61099TX 1/2/85 Tract J1-I
2864.40 2864.40 2864.40 The Moran Corp. NMA-
58996TX 6/11/84

Parcel C
NMA-59058TX 6/25/84
Henry Applewhite NMA-
59059TX 6/25/84

Survey
Abstract No. 58*

J. Stidham Survey
Abstract No. 522 *

James Jordan Survey
Abstract No. 28 *

Daniel Hanazkee
Survey
Abstract No. 254 *
Abstract No. 255 *

Thomas A. Cresap
Survey
Abstract No. 123 *

Thomas H. Webb Survey
Abstract No. 601 *

J. M. Springer Survey
Abstract No. 529 *

J. B. Chesser Survey
Abstract No. 130 *

93-184 Beard Oil Co. NMA-61100TX 1/2/85 Tract J1-I
7253.00 7253.00 7253.00 The Moran Corp. NMA-
58995TX 6/11/84

Parcel D
NMA-58996TX 6/11/84
I & G.N.R.R. Co.
Survey
James B. Tennant NMA-61119TX
1/2/85

Abstract No. 690 *

Beard Oil Co. NMA-62552TX 4/10/85
Thomas A. Cresap
Survey
Abstract No. 111 *
Abstract No. 123 *
Abstract No. 714 *

Charles Clabough
Survey
Abstract No. 131 *

G. W. Robinson Survey
Abstract No. 454 *

Jacob Pattison Survey
Abstract No. 436 *

Thomas Chatman Survey
Abstract No. 146 *

W. M. Elkin Survey
Abstract No. 178 *

128 IBLA 217

J. P. McFarland
Survey
Abstract No. 402 *

Alexander Whittaker
Survey
Abstract No. 581 *

John Harper Survey
Abstract No. 247 *

T. A. Milikien Survey
Abstract No. 721 *

93-185 Beard Oil Co. NMA-61101TX 1/2/85 Tract J1-III
5499.00 5499.00 5499.00 The Moran Corp. NMA-
58991TX 6/1/84

Parcel A
NMA-58998TX 6/12/84
William Clark Survey
NMA-59272TX
7/9/84

Abstract No. 128 *

James B. Tennant NMA-61117TX 1/2/85
J. R. Rhea Survey
Abstract No. 411 *
Beard Oil Co. NMA-62544TX 4/10/85

Thomas James Survey
Abstract No. 288 *

R. C. Chadduck Survey
Abstract No. 154 *

James J. Foster Survey

Abstract No. 204 *

Charles Vandevender
Survey
Abstract No. 586 *

William S. Taylor
Survey
Abstract No. 545 *
Abstract No. 540 *

M. Looby Survey
Abstract No. 330 *

Thomas Betts Survey
Abstract No. 95 *

Thomas S. Foster
Survey
Abstract No. 720 *
Abstract No. 738 *

Larkin Day Survey
Abstract No. 163 *

T. & N.O.R.R. Co.
Survey
Abstract No. 434 *
Abstract No. 705 *
Abstract No. 695 *
Abstract No. 696 *

93-186 Beard Oil Co. NMA-61102TX 1/2/85 Tract J1-III
7828.30 7828.30 7429.30 The Moran Corp. NMA-58998TX
6/12/84

Parcel B
NMA-59272TX 7/9/84
James J. Foster
Survey
Beard Oil Co. NMA-62543TX

4/10/85

Abstract No. 204 *

William Francis Survey
Abstract No. 217 *

John Stapely Survey
Abstract No. 475 *

B. F. Morris Survey
Abstract No. 381 *

James Lee Survey
Abstract No. 316 *

Thomas P. Whitmore
Survey
Abstract No. 639 *

128 IBLA 219

Charles Vandevender
Survey
Abstract No. 586 *

William McBride Survey
Abstract No. 360 *

R. F. Oliver Survey
Abstract No. 411 *

Jesse Hyatt Survey
Abstract No. 279 *

S. D. Hay Survey
Abstract No. 268 *

William S. Taylor
Survey
Abstract No. 562

David Pevehouse Survey
Abstract No. 422 *

J. W. Fowler Survey
Abstract No. 208 *

Thomas Betts Survey
Abstract No. 95 *

T. & N.O.R.R. Co.
Survey
Abstract No. 434 *
Abstract No. 696 *

W. R. Sheffield
Survey
Abstract No. 667

93-187 Beard Oil Co. NMA-61103TX 1/2/85 Tract J1-IV
4145.00 4145.00 3657.00 The Moran Corp. NMA-58973TX
5/14/84

Parcel A
NMA-59272TX 7/9/84
John Buehn Survey
Abstract No. 83

S. McCarter Survey
Abstract No. 339 *

M. L. Womack Jr.

Survey
Abstract No. 730 *

H. R. Burton Survey
Abstract No. 656 *

Thomas P. Whitmore
Survey
Abstract No. 638 *

William Patterson
Survey
Abstract No. 421 *

93-188 Beard Oil Co. NMA-61104TX 1/2/85 Tract J1-IV
4495.00 4495.00 2145.00 The Moran Corp. NMA-58969TX
5/8/84 Parcel B
NMA-58973TX

5/14/84

Samuel T. Moore
NMA-59272TX

7/9/84

Survey
Abstract No. 354 *
James B. Tennant NMA-61116TX 1/2/85

George B. Wilson
Beard Oil Co. NMA-62551TX 4/10/85
Survey
Abstract No. 589

John Lang Survey
Abstract No. 323

William Nettles
Survey
Abstract No. 402

M. L. Womack Jr.
Survey
Abstract No. 730 *
Abstract No. 727 *
Abstract No. 728

A. Fleming Survey
Abstract No. 222

William Suitor Survey
Abstract No. 510

S. Drury Survey
Abstract No. 183 *

J. R. Ratcliff Survey
Abstract No. 473 *

H. R. Burton Survey
Abstract No. 656 *

S. McCarter Survey
Abstract No. 339 *

J. G. Smith Survey
Abstract No. 538 *

John Buehn Survey
Abstract No. 83

93-189 Beard Oil Co. NMA-62543TX 4/10/85 Tract J1-III
8043.30 8043.30 7644.30 The Moran Corp. NMA-58998TX
6/12/84

Parcel B
NMA-59272TX 7/9/84
James J. Foster
Survey
Beard Oil Co. NMA-61102TX 1/2/85
Abstract No. 204 *

William Francis
Survey
Abstract No. 217 *

128 IBLA 222

John Stapely Survey
Abstract No. 475 *

B. F. Morris Survey
Abstract No. 381 *

James Lee Survey
Abstract No. 316 *

Thomas P. Whitmore
Survey
Abstract No. 639 *

Thomas Betts Survey
Abstract No. 95 *

T. & N.O.R.R. Co.
Survey
Abstract No. 434 *
Abstract No. 696 *

Charles Vandevender
Survey
Abstract No. 586 *

W. R. Sheffield
Survey
Abstract No. 667

William McBride
Survey
Abstract No. 360 *

R. F. Oliver Survey
Abstract No. 411 *

Jesse Hyatt Survey
Abstract No. 279 *

S. D. Hay Survey
Abstract No. 268 *

William S. Taylor
Survey
Abstract No. 562

David Pevehouse
Survey
Abstract No. 422 *

J. W. Fowler Survey
Abstract No. 208 *

93-190 Beard Oil Co. NMA-62544TX 4/10/85 Tract J1-III
5599.00 5599.00 5599.00 The Moran Corp. NMA-58991TX
6/1/84

Parcel A
NMA-58998TX 6/12/84

William Clark
NMA-59272TX 7/9/84
Survey

Abstract No. 128 *
James B. Tennant NMA-61117TX

1/2/85

J. R. Rhea Survey
Beard Oil Co. NMA-61101TX 1/2/85
Abstract No. 411 *

Thomas James Survey
Abstract No. 288 *

R. C. Chadduck Survey
Abstract No. 154 *

James J. Foster
Survey
Abstract No. 204 *

Charles Vandevender
Survey
Abstract No. 586 *

William S. Taylor
Survey
Abstract No. 545 *
Abstract No. 540 *

128 IBLA 224

M. Looby Survey
Abstract No. 330 *

Thomas Betts Survey
Abstract No. 95 *

Thomas S. Foster Survey
Abstract No. 720 *
Abstract No. 738 *

Larkin Day Survey
Abstract No. 163 *

T. & N.O.R.R. Co. Survey
Abstract No. 434 *
Abstract No. 705 *
Abstract No. 695 *
Abstract No. 696 *

93-191 Beard Oil Co. NMA-62545TX 4/10/85 Tract J1-I
 7657.80 7657.80 7657.80 The Moran Corp. NMA-58996TX
6/11/84

Parcel B
 NMA-59007TX 6/18/84
Alexander Whittaker
 NMA-59058TX 6/25/84
Survey
Abstract No. 581 *
Beard Oil Co. NMA-61098TX 1/2/85

J. P. McFarland
Survey
Abstract No. 402 *

W. M. Elkin Survey
Abstract No. 178 *

Thomas A. Cresap
Survey
Abstract No. 123 *

Daniel Hanazkee
Survey
Abstract No. 255 *

J. B. Chesser Survey
*Abstract No. 130 **

Thomas Corner Survey
*Abstract No. 144 **

Z. Wilson Survey
*Abstract No. 604 **

Henry Applewhite
Survey
*Abstract No. 58 **
*Abstract No. 59 **
*Abstract No. 60 **

John Harper Survey
*Abstract No. 247 **

Thomas Toby Survey
*Abstract No. 561 **
*Abstract No. 562 **

James Moore Survey
*Abstract No. 406 **

William Higgins Survey
*Abstract No. 249 **

J. C. Harrison Survey
*Abstract No. 263 **

James H. Truitt Survey
*Abstract No. 553 **
*Abstract No. 559 **

J. W. Ingersoll Survey
*Abstract No. 27 **

93-192 Beard Oil Co. NMA-62551TX 4/10/85 Tract J1-IV
5120.00 5120.00 3120.00 The Moran Corp. NMA-58969TX
5/8/84

Parcel B
NMA-58973TX 5/14/84

Samuel T. Moore
NMA-59272TX 7/9/84

Survey

Abstract No. 354 *

James B. Tennant NMA-61116TX 1/2/85

George B. Wilson

Beard Oil Co. NMA-61104TX 1/2/85

Survey

Abstract No. 589

John Lang Survey

Abstract No. 323

William Nettles

Survey

Abstract No. 402

M. L. Womack Jr.

Survey

Abstract No. 730 *

Abstract No. 727 *

Abstract No. 728

A. Fleming Survey

Abstract No. 222

William Sutor Survey

Abstract No. 510

S. Drury Survey

Abstract No. 183

J. R. Ratcliff Survey

Abstract No. 473 *

H. R. Burton Survey

Abstract No. 656 *

S. McCarter Survey

Abstract No. 339 *

J. G. Smith Survey
Abstract No. 538 *

John Buehn Survey
Abstract No. 83

93-193 Beard Oil Co. NMA-62552TX 4/10/85 Tract J1-I
7843.00 7843.00 7843.00 The Moran Corp. NMA-58995TX
6/11/84

Parcel D
NMA-58996TX 6/11/84

I. & G.N.R.R. Co.
James B. Tennant NMA-61119TX 1/2/85
Survey
Abstract No. 690 *
Beard Oil Co. NMA-61100TX 1/2/85

Thomas A. Cresap
Survey
Abstract No. 111 *
Abstract No. 123 *
Abstract No. 714 *

Charles Clabough
Survey
Abstract No. 131 *

G. W. Robinson Survey
Abstract No. 454 *

Jacob Pattison Survey
Abstract No. 436 *

Thomas Chatman Survey
Abstract No. 146 *

W. M. Elkin Survey
Abstract No. 178 *

J. P. McFarland
Survey
Abstract No. 402 *

Alexander Whittaker Survey
Abstract No. 581 *

John Harper Survey
Abstract No. 247 *

T. A. Milikien Survey
Abstract No. 721 *

93-225 Beard Oil Co. NMA-60921TX 1/2/85 Tract J1g
4742.00 2132.60 2132.60 Maunie F. Dunnam NMA-58197TX
12/30/83

James W. Robinson
Survey

The Moran Corp. NMA-60629TX 11/16/84
Abstract No. 45 + ! #

Tract J5a
J. R. Richardson
Survey
Abstract No. 256

L. R. Pearson Survey
Abstract No. 374

T. Dunn Survey
Abstract No. 238

128 IBLA 220

* All of these surveys were determined to be entirely within the Sam Houston National Forest KGS, effective Oct. 14, 1992.

+ All of these surveys were determined to be partially within the West Mercy or Mercy Field KGS, effective July 5, 1962.

! All of these surveys were determined to be partially within the West Mercy, Mercy, Southeast Mercy, or Southwest Mercy Field KGS, effective Sept. 14, 1987.

Part of this survey was determined to be within the Southeast Mercy Field KGS, effective Jan. 19, 1993.

Surveys where the lands sought to be leased are crossed by the presumptively productive limits of a KGS are underscored.

This appendix represents the Board's best attempt to identify the survey(s) encompassed by each lease offer, as taken from BLM oil and gas (OG) plat(s), based on the depiction of lands sought on the Forest Service map(s) attached to the offer. Spellings of survey(s) and abstract number(s) also come from the OG plat(s).